

S. Wagner,
Honey Comb Frame.

No.
32,258.

Patented May 7, 1861.

Fig. 1

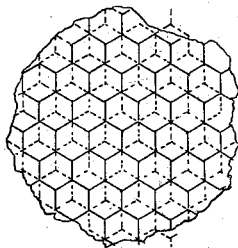


Fig. 3a

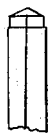


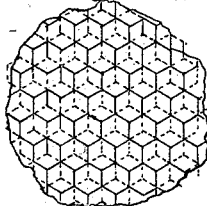
Fig. 4



Fig. 3b



Fig. 2



Witnesses
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SAMUEL WAGNER, OF YORK, PENNSYLVANIA.

ARTIFICIAL HONEYCOMB.

Specification of Letters Patent No. 32,258, dated May 7, 1861.

To all whom it may concern:

Be it known that I, SAMUEL WAGNER, of York, in the county of York and State of Pennsylvania, have invented a new and
5 useful Article of Manufacture; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention so full and
10 exact as to enable those skilled in the art to practice it.

My new manufacture consists in a substitute for the central division or foundation
15 of the comb built by bees, either with or without the whole or any portion of the walls forming the hexagonal cells projecting from the division, which substitute is artificially and suitably formed upon both sides
20 or faces, and of any suitable material which is susceptible of receiving the desired and necessary configuration.

To enable others skilled in the art to practice my invention I will describe the best method and means with which I am ac-
25 quainted, and which I have invented, by which I produce my said new manufacture.

Figures 1 and 2 of the drawings represent my new manufacture in plan; the black lines showing the salient angles on the obverse
30 side, from which spring its walls which form hexagonal cells. The red lines show similar angles on the reverse side, and the red and black lines illustrate the relative disposition of the cells. Fig. 1 represents
35 comb foundation suitable for the formation of drone comb, while Fig. 2 represents that suited for worker comb. Figs. 3^a and 3^b are elevations of one of the hexagonal solids which, when used as herein specified, will
40 produce the comb foundation shown in Fig. 1 and in section on an enlarged scale in Fig. 4.

A mold is prepared, similarly to those used in the production of printers' type in
45 which solids are cast which will accurately fill the interior of a newly formed cell of a natural comb of the kind of which it is desired to form the central division. Numbers of type or solids being produced they are
50 "locked together" into a "form" like printers' type, and fac-similes of the assemblage are produced by either of the well known processes of stereotyping or electrotyping. Two of these stereotypes or electrotypes are made to act, by means of a press
55 or otherwise, upon the opposite sides or faces

of an interposed sheet of suitable material, which action gives the sheet the configuration desired. It is best to obtain in this division or foundation sheet a uniform degree
60 of tenuity, which can only be done by closely imitating the natural waxen comb, which is effected by so placing the dies that the apices formed at the juncture of the three rhomboidal facets of each hexagon shall be ex-
65 actly opposite the juncture of the sides of three facets of adjacent hexagons forming the reverse side.

The angles of the rhomboidal facets should be as nearly as possible 109° and 71°, and the
70 dies should not be permitted to approach each other so nearly as to reduce the thickness of the interposed material much less than the one hundredth part of an inch. Should it be deemed desirable to form the hexagonal
75 walls of the cells, or any portion of them, the type or solids should be formed as seen in Figs. 3^a, 3^b, with a band or projection around them of about the one two hundredth
80 part of an inch in thickness, and some taper may be given to the type from the band toward the rhomboidal facets. If the walls
85 of the cells are to be extended to any considerable distance from the central web or division provision should be made for the admission of air into the spaces left vacant
90 by the withdrawal of the dies from the material being formed, which can be accomplished by making a cavity in each hexagonal projection of the die, and with a re-
movable valve in one of the facets of each hexagon, or at the apex formed by the juncture of the facets.

Among the many materials which may be used may be mentioned compounds of
95 which wax forms a part—rubber and gutta percha, and compounds of which they or either of them are components, papier mâché &c. Thin sheets of metal, reduced to the
100 the tenuity of foils, may be used, though I prefer good non conductors of heat improved by being rendered water-proof if not so. Very many materials and com-
pounds not mentioned may be used, but it is unnecessary herein to attempt to specify
105 them, as my invention is not confined to, and is independent of, any particular material. (It may be mentioned that with some materials heat, as well as pressure, may be used in shaping the artificial comb founda-
110 tion.

Many variations may be made in my in-

vention which though not improvements upon it, embody its essence. For example the relative arrangement of the impressing dies may be varied so as to produce a different arrangement of cells on the obverse and reverse sides of the comb foundation from that shown in the drawings, in which case the thickness of the division plate would have to be increased provided the pyramidal depressions made by the three rhomboidal facets terminating each hexagon, were retained. Such depressions might be dispensed with and the foundation sheet might be impressed so as to have slightly projecting ridges of the material from which the sides of the cells can be extended on each side of the sheet. But I do not recommend any departure from the closest imitation possible of the natural central sheet of the comb as formed by bees.

To render the artificial comb foundation acceptable to the bees it is not requisite that any portion of the sides of the cells should be formed thereon, as the salient angles on either side formed at the edges of the described depressions are a sufficient guide to the bees, and from them they will commence the waxen sides of their hexagonal cells.

By the employment of my invention in bee hives perfect regularity of combs and

their kind is insured, and the production of drones prevented to any extent desired.

I propose to take honey from store combs built upon my artificial foundations by removing the full combs from the hives and by slicing off the natural waxen superstructure; the artificial central portion of the comb being then replaced in the hive will be again built upon by the bees, saving to them always the elaboration of wax and the time required for the construction of this part of the comb which consumes more time in its natural construction than other parts of the comb of equal weight, because fewer laborers can be engaged upon it at one time than on other portions.

I claim—

As a new article of manufacture, an artificial substitute for the central division of comb built by bees, which presents to them, on both sides thereof, guides for the construction or continuation of the sides of the comb cells, whether the same is constructed with or without the whole or any portion of the sides of the cells.

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Witnesses:

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